

PREVENTION OF CONGENITAL SYPHILIS

infection occurring in pregnancy, due to promiscuity. This type of case is now the predominant problem in Glasgow and its control is not influenced by the organized antenatal clinic system of treatment. Its control is dependent upon the control of venereal disease as an infectious disease.

The suggestion that congenital syphilis alone should be notifiable should be opposed. The success of our persistent and unobtrusive preventive scheme, at the antenatal clinics, shows clearly that we had got control of the problem in the ordinary population without notification. Notification of congenital syphilis, as such, would have little or no effect in the reduction in the number of syphilitic children born to these women, who are infected actually during their pregnancy, and who are promiscuous in their behaviour. Such women are a serious problem and a real menace to society. They illustrate clearly the urgent necessity for further measures for the control of venereal diseases generally. Only by such measures will they ever be effectively dealt with. In Glasgow we have developed to a high degree the follow-up system under the voluntary treatment scheme by specially trained health visitor almoners, and I have told you of the special linking of the maternity and child welfare and venereal disease staffs. Despite the combined efforts of these medical officers and health visitors to do everything to trace, follow up and control these patients, it is a serious matter that more than one-half the total number of congenital syphilitic infections in Glasgow last year occurred in children born of these women. These facts speak for themselves. The present position cannot be allowed to continue, and it is clear that we must be given power to deal radically with promiscuous men and women.

Strong support should be given to the notification of the venereal diseases. No one can be satisfied with the present position and, although the long-term policy of education and the provision of decent living conditions for everyone are of fundamental importance, statutory public health measures are of equal importance. If these are not secured speedily, the position at the end of hostilities may become worse, with the result that tragedy in many families and wastage of infant life will be increased.

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I am no newcomer to this subject, for more than sixteen years ago, to be exact in January, 1928, I delivered an address before this Society on "The Antenatal Treatment of Syphilis" which was followed by a discussion opened by Colonel Harrison all of which is recorded in the fourth volume of the *British Journal of Venereal Diseases*. Being essentially a prophylactic practitioner, my interest in this aspect of venereal disease has not in the meantime flagged but, on the contrary, has been stimulated by the apparent apathy of authorities, lay and medical, in failing to realize the seriousness of the plight of congenital syphilitic victims—the blind, the deaf, the lame, the mentally defective, and others who suffer from the effects of this disease, to say nothing of the deaths, foetal and infantile, annually attributable to syphilis. It is refreshing therefore to hear from Dr. Wattie of the valuable results which have been achieved in one of the largest cities of the more enlightened part of Great Britain; she and her far-sighted chief, Sir Alexander MacGregor, are both to be congratulated upon having initiated and successfully carried through a practical scheme for the examination of expectant mothers at the Glasgow Corporation's antenatal clinics and for their treatment, when necessary, at the same clinics. They are not referred to venereal diseases clinics. This is the secret of the success of the Glasgow scheme, although doubtless Dr. Wattie's enthusiasm has contributed to it in no small measure. As she has told us the number of congenital syphilitics under one year of age reported to the Medical

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Officer of Health of Glasgow has fallen from 350-400 in 1924 to under twenty during the few years before 1941. A wonderful achievement !

Prenatal blood tests

Preparatory to this discussion I wrote to various authorities to inquire whether or not they carried out routine blood tests for syphilis on expectant mothers and, if so, what percentage gave positive results and how many of these women received adequate prenatal treatment. Thirty-one questionnaires were sent out, six to London boroughs, eleven to county medical officers of health, seven to seaport towns, five to inland cities and towns, and two to the maternity departments of London hospitals. In only eleven were routine blood tests done of which the results were submitted to me ; sixteen authorities did not carry out routine blood tests but in two counties an arrangement has recently been made to test unmarried expectant mothers ; two had not any figures available and two did not reply.

Leaving out of account the positive serological results obtained on selected cases, the percentage of positive results varies between 0·46 and 2·79 for tests carried out during the past nine or ten years. Some authorities have included weak positives with the positives and others have a large number of doubtful positives. There is one fact which emerges clearly from these investigations, namely that there appears to be no uniformity in performing the complement fixation test. For example, one authority controlling several laboratories doing Wassermann tests for prenatal clinics returned 0·27 per cent positive from one laboratory and 2·79 per cent from another laboratory, no less than ten times as many. The explanation offered is that in the case of the laboratory giving the smaller positive figure the antigen used for part of the year gave "doubtful results" and that the inclusion of "weak positives" with the positives led to the high figure, 2·79 per cent, returned by the other laboratory. This is an unsatisfactory state of affairs, for we should be entitled to expect uniformity in technique and in reporting results in the case of a single public authority, even if we could not expect it all over the country.

From the sources which I consider to be the most reliable we may estimate the number of positive reactions among expectant mothers in Great Britain to be somewhere between 1 and 2 per cent, and in most areas the numbers have risen in 1941 and 1942, doubtless owing to war conditions. In an investigation now in progress in Newcastle upon Tyne and the surrounding districts, one of the objects is to ascertain the percentage of positive reactions for syphilis among the expectant mothers in an area in which hitherto the test had been applied only when any suspicion arose. If the number of positive reactions found should agree with the figure of from 1 to 2 per cent which I have mentioned above, it is to be hoped that the Government will act accordingly.

One of the medical officers of health to whom I sent my questionnaire replied that venereal disease in children is an "extremely rare condition". If by that he means sexually acquired venereal disease in children than I am in full agreement with him ; but if, as the context of his letter implies, he thinks congenital syphilis is an "extremely rare condition" his view is to be deplored, even although it may be held by many clinicians and even paediatricians. His letter continues : " We do not carry out a routine blood test on antenatal or nursing mothers. There has been insufficient evidence of incidence of the disease to warrant such a procedure." This begs the whole question, for it is well known that a pregnant woman may show absolutely no evidence of syphilis except that of a positive blood test, which has been amply proved when routine prenatal blood tests have been taken.

Prenatal blood tests in the United States of America

For the purposes of this discussion I wrote in September, 1943 to Dr. Vonderlehr, Assistant-Surgeon-General of the United States Public Health Service, Division of Venereal Diseases, asking him several questions which have a bearing on this subject. Within a fortnight of the receipt of my letter a very full reply was sent me by Dr. J. R. Heller, Jun., the successor to Dr. Vonderlehr who had left the

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Division of Venereal Diseases for another post. I received from him also a monograph published in 1941 by the American Social Hygiene Association entitled "Summary of State legislation requiring pre-marital and prenatal examinations for venereal diseases", by Bowden and Gould. From it one learns that legislation requiring prenatal blood tests was first passed in 1938 by the three States, New Jersey, New York and Rhode Island, and that within a period of four years (1938-41), twenty-six States had passed such prenatal legislation. By September, 1943 the number had risen to thirty-one of the total of forty-eight States.

In twenty-five of the twenty-six States mentioned in the pamphlet legislation is specifically directed toward the physician or midwife in attendance upon the pregnant woman; in the remaining State (North Carolina) such legislation is directed towards the woman herself as well as her professional attendant, but no legal penalty is imposed for her failure to request a blood test. In thirteen States it is mandatory for blood tests to be taken of all pregnant women and in the other thirteen it is mandatory only under specified conditions, for example when she refuses a request for a specimen, or if there is no objection by the woman and so on.

The time at which the test must be taken varies; in nineteen States it is at the first professional visit, as soon as possible or within ten, fifteen or twenty days afterwards, in others at the time of diagnosis, within fourteen days, prior to the third month and so on. In twenty-five of the States the law specifies that tests must be made in laboratories approved by the State concerned. In eighteen of the States provision has been made for physicians to obtain tests free of charge. The results of the tests are filed with the State Department of Health. In none of the twenty-six States are there any penalties prescribed for women refusing to have tests taken; in only two of the States is the professional attendant held fully responsible for the taking of blood tests of pregnant women.

Coming now to figures, Dr. Heller writes: "Data on the proportion of positive tests in the different States are somewhat incomplete at present. From 1935 to 1940, 1.69 per cent of 282,600 expectant mothers showed evidence of syphilis. In Connecticut in 1942, 0.75 per cent of 27,500 were positive or doubtful. In Michigan, 1939-40, 1 per cent were positive out of 20,400 specimens. In California from 29th September, 1940 to January, 1941, 1.6 per cent were positive in 156,000 tests carried out."

We see therefore, that on the whole, the percentage of positives is approximately the same as it is in Great Britain, which is somewhat of a surprise. With the higher incidence of syphilis among the negroes one would have expected the prenatal figures to be higher in the United States of America. Possibly the few States referred to are not thickly populated by negroes.

Lastly, I inquired about false positives to which Dr. Heller replied: "We have no studies bearing on this point specifically in connexion with prenatal blood testing." However, the most reliable opinions are that pregnancy is not a cause of false positives.

Moore (*The Modern Treatment of Syphilis*, 2nd edition, 1941) states: "There still persists a superstition, wholly unwarranted, that pregnancy is a frequent cause of false positive blood serologic reactions. This has been repeatedly demonstrated to be untrue, but the fallacy will not die down. Pregnancy does not cause false positive blood serologic tests. A positive blood serologic test in the pregnant woman, verified on repetition to avoid error in labelling or technique, is as diagnostic of syphilis as in the male or non-pregnant female, regardless of the presence or absence of a history or physical evidence of infection. The physician who disregards such a verified test and withholds anti-syphilitic treatment from the mother accepts a grave responsibility for which he may justly be held accountable."

Dr. Heller adds that this contention is borne out by numerous studies and is "in agreement both with the findings of the several serologic conferences and inter-State evaluations carried out by the United States Public Health Service, which show that the acceptable tests which are routinely used yield considerably less than 0.5 per cent of false positives. The general conclusion to be derived from the foregoing discussion is that one should be unwilling to initiate treatment on the basis of a single test, especially if the result be not strongly positive, but that a

repeatedly strong positive test is strong presumptive evidence of syphilis and that great caution must be used in withholding treatment in such a case."

Venereal diseases scheme in Edinburgh

In further support of my plea for the routine prenatal testing of expectant mothers and the treatment of the positive reactors, may I make a reference to the Annual Report of the City and Royal Burgh of Edinburgh Venereal Disease Scheme for 1938 by Dr. R. C. L. Batchelor? For the four years from October, 1934 to 1938, out of over 8,000 cases examined at the Royal Maternity Hospital 0·7 per cent were positive; whereas during the same period out of 7,600 cases examined at the Elsie Inglis Memorial Hospital and Clinics 3·3 per cent were positive. The discrepancy between these figures of 0·7 and 3·3 per cent appears to be caused by the very great preponderance of "very weak" and "doubtful" positive results—207 from the latter source, compared with only six from the Royal Maternity Hospital. This in itself suggests the advisability of inquiring into the technique of the methods employed in the laboratories concerned. Dr. Batchelor makes no comment on these figures, but after discussing the pros and cons comes to the conclusion that the omission of routine Wassermann testing in pregnancy would be a retrograde step and that during the present emergency, with its increased incidence of syphilis, the need for this preventive measure is greater than ever it was.

Position today compared with that of 1922

What is the position today compared with what it was twenty years ago? Cruickshank (1922) in 1,900 unselected cases in Glasgow found nearly 10 per cent of expectant mothers with a positive Wassermann reaction. In 1924, when Dr. Wattie started working there, the percentage of positive cases was about 5 and now the number is under 1 per cent. At the Royal Maternity Hospital, Edinburgh, in 1926 and 1927 Miss Gladys Dodds, in Professor F. J. Browne's clinic, found syphilis in 7 per cent of the 2,000 patients examined, whereas in the period 1934 to 1938 Dr. Batchelor's report states that the percentage had dropped to 0·7 in the same hospital. These figures are very encouraging.

During the discussion on the paper I read before this Society in 1928 Colonel Harrison estimated that over 16,000 pregnant women every year were syphilitic and needed treatment. He added that this number must be regarded as well below the mark and that nothing approaching the number of 16,000 is under treatment for syphilis at the centres. Today I estimate conservatively that from 1 to 1·5 per cent of all the 700,000 pregnant women in this country are syphilitic, so that there are at least 7,000 syphilitic still-births and congenitally syphilitic children born annually. This should not be, for it is almost entirely preventable as has been demonstrated in Scandinavia, in the United States of America, in Batavia and in other enlightened countries in which prenatal testing and treatment has been practised. As Moore has said, "Congenital syphilis is the disgrace of modern medicine" for it is a preventable disease. Sir William Osler in his famous Oration in 1917 on "The Anti-Venereal Campaign" said that "the spirochaete of the syphilis is easily the most notable among germs in the frequency of its transmission from parent to child. It may kill the child in utero, a few days after birth, or within the first two years of life, or the blighted survivor may be subject to innumerable maladies".

What is being done to put a stop to this entirely preventable scourge? By the Government very little is being undertaken. Some years ago a deputation from the British Social Hygiene Council met representatives from the Ministry of Health to try to induce the Ministry to make congenital syphilis a notifiable disease, just as ophthalmia neonatorum is, but success was not achieved. True there is an occasional oasis, such as Glasgow, where the disease has been all but eliminated by Dr. Wattie's pertinacity, hard work, and personality, attributes which are of great importance in venereal disease work.

It may be said against the routine testing of all pregnant women that there are

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not nearly enough serologists available. That may be so ; nevertheless the authorities are to blame for not having trained them ; they must be properly trained, for it would be worse than useless to allow serological blood tests to be carried out except in approved laboratories and by approved techniques.

A Royal Commission on Population has just been appointed to inquire into the present population trends. I should like this Society to suggest to that Commission that by prenatal testing and treating of mothers we could promise to add probably as many as 10,000 healthy children a year to the population. However, Royal Commissions take years to report. Let us rather approach the Government and ask it to inform all doctors and laymen of the value to the community of prenatal treatment which has proved so successful in the countries in which it has been introduced. The aid of the B.B.C. even might be invoked.

We hear so much nowadays about improving the nutrition and physique of children ; yet we neglect to utilize one method by which we know for certain that we can effect a vast improvement in a limited, yet not inconsiderable number of them. It is to be hoped that the result of the Newcastle upon Tyne experiment will be such as to justify the Government in extending its methods throughout Great Britain.

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DISCUSSION ON THE PRECEDING PAPERS

Dr. A. E. W. McLachlan said that he had listened with great interest to the two papers and agreed with many of the views expressed. Up to recently the blood testing of pregnant women in Newcastle had applied only in the case of illegitimate pregnancy ; in the past six months the scope had been widened to include as many expectant mothers as possible. This had led to the recognition of a certain amount of previously undetected maternal syphilis, while, in addition, a number of defaulters were brought back to the clinic for treatment. It was not possible to quote results in the prevention of congenital syphilis : he believed, however, that when syphilis was detected even as late as the seventh month there was nearly a 50 per cent chance of ensuring a healthy child.

In the investigation of the child, he relied to a great extent on x-rays of the long bones as being possibly more correct than or at any rate an invaluable supplement to the Wassermann reaction. Periostitis affecting multiple long bones was invariably followed by a positive Wassermann test. After the adequate treatment of sero-positive pregnant women, a positive Wassermann reaction might occur, from the maternal reagin, transferred to a healthy child ; in these cases x-ray and clinical findings were negative and the serum reaction became negative in six weeks. One had to consider not only the detection of congenital syphilis, but also its exclusion in those cases in which the mother had been adequately treated.

Dr. Wattie had emphasized the number of infections occurring late in pregnancy ; these might be difficult to detect unless a careful clinical examination was made and if necessary repeated monthly ; much depended on the knowledge of the social background of the patient.

Col. Harrison congratulated Dr. Wattie on the wonderful results which had been obtained in Glasgow. They showed what could be done by diligence and enthusiasm. When one thought of Cruickshank's figure of 9 per cent in 1920-1—though his sample was perhaps more selected—and the present figure of 0.9 per cent, one realized what a splendid achievement was the latter. Another point which Dr. Wattie had made was the principle of treating the disease wherever it was found. This was a principle which he had tried to propagate very early on in his work at the Ministry of Health. At that time the idea was not very warmly received ; there was a great fear that, if syphilis were treated in maternity and child welfare centres, they would be shunned. He had never seen why that need be, if the work were done tactfully ; on the other hand, a great amount of good might be done. Accordingly his branch had quietly persuaded the medical officers of health that it was worth trying, and in a number of places in this country there were maternity and child welfare centres which had been approved as treatment centres ; there was no question but that they had done a great amount of good.

A certain amount had been said about the percentage of positive reactions, and something about the alleged bogey of false positives caused by pregnancy. He did not think that the